6100E Series

Digital Fiber Optic Multi-Channel Audio Transport System with Data Options

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SAFETY INSTRUCTIONS AND COMPLIANCE DECLARATIONS

PLEASE OBSERVE THE FOLLOWING SAFETY PRECAUTIONS AS OUR PRODUCTS CONTAIN

CLASS I LASER PRODUCTS

WARNING

Do not disconnect the fiber optic connector while the unit is powered up. Exposure to laser radiation is possible when the laser fiber optic connector is disconnected while the unit is powered up.

Although the fiber optic connectors in this product emit only Class 1 energy that is below the levels considered to be hazardous, one should never stare directly into a fiber optic connector or an unconnected fiber end unless one can be certain that no exposure to laser energy could occur.

CAUTION

This manual is intended for use by trained service personnel. The use of controls, making adjustments, or performing operations other than those specified may result in hazardous radiation exposure.

The following label or equivalent is located on the surface of laser products. This label indicates that the product is classified as a CLASS 1 LASER PRODUCT.

SURGE PROTECTION DEVICE RECOMMENDED

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lightning strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.

TABLE OF CONTENTS

1.0 PRODUCT DESCRIPTION 5
2.0 SETUP 8
2.1 MOUNTING 8
2.2 CABLING AND CONNECTORS 9
2.2.1 AUDIO CABLE CONNECTION 9
2.2.2 OPTICAL FIBER CONNECTION 12
2.3 AC POWER CONNECTION 14
3.0 OPERATION 15
4.0 MAINTENANCE AND TROUBLESHOOTING 16
4.1 MAINTENANCE 16
4.2 TROUBLESHOOTING 16
5.0 SPECIFICATIONS 18
6.0 SERVICE PROCEDURE 20
6.1 REPLACEMENT POLICY 20
6.2 RETURN AND REPAIR SERVICE 20
7.0 LIMITED WARRANTY 21

1.0 PRODUCT DESCRIPTION

The 6100E Series provides simultaneous transmission of multiple channels of digitized audio over one or one pair of fiber. The standard 6100E system comes with 4-, 8-, and 16-channel versions and transmits these audio channels in one direction. Models up to 32-channels are also available as a custom version. Many versions of optical transmitter and receiver combinations are available to address different distance requirements.

The 6100E features a digital fiber optic transmission technology, capable of providing crisp audio, little or no maintenance, high functional reliability, and low operating costs. The quality of BCI's audio transmission digital design is much superior to the analog transmission counterparts (based on amplitude or frequency modulation) available from other manufacturers. In addition, no user adjustments are required in the 6100E system, enabling quick setup and trouble-free operation.

The 6100E is available with two packaging options: a rugged, standalone, and compact unit, or a plug-in card for a card cage system. Panel connectors are provided for audio (terminal block) and fiber connection (FC-type for singlemode fiber or ST-type for multimode fiber). They are also easily monitored by separate LED indicators for power, optical link, and channel activity.

Due to its digital transmission design, the 6100E is capable of addressing a variety of non-standard configurations. Contact us to discuss your custom, OEM/private brand and high volume requirements. Figures 1-1 through 1-4 illustrate the connections, LED indicators, and other elements displayed in the front and rear panels of the 6108E and 6116E. The 6116E is a 16-channel audio version and the 6108E is our 8-channel audio version. The 6104E is a subset of the 6108E and is the 4-channel audio version.

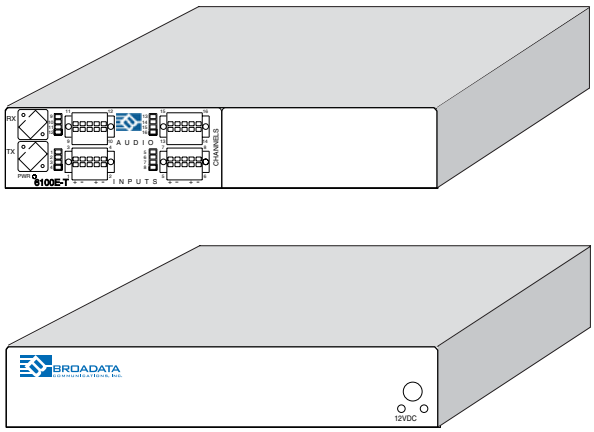

Figure 1-1
6116E-T Front/Rear Panels

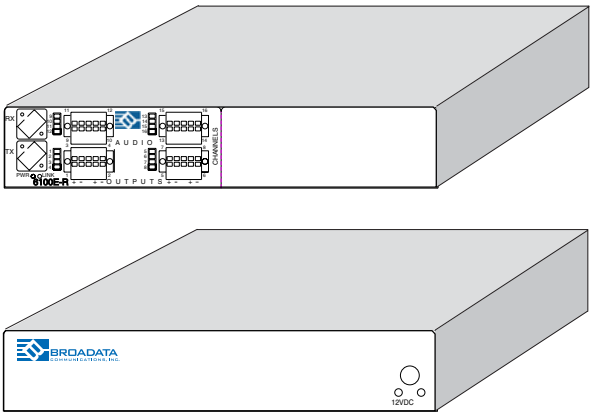

Figure 1-2
6116E-R Front/Rear Panels

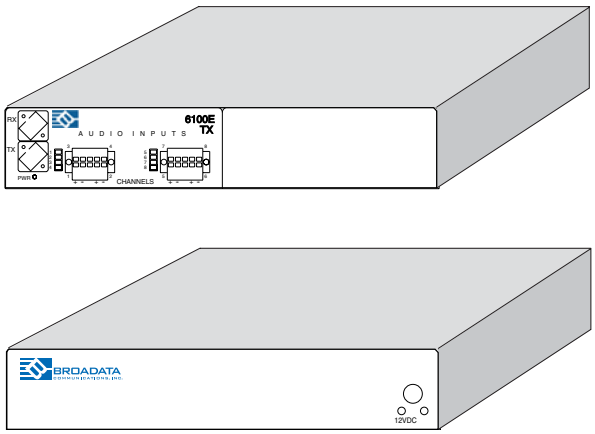

Figure 1-3
6108E-T Front/Rear Panels

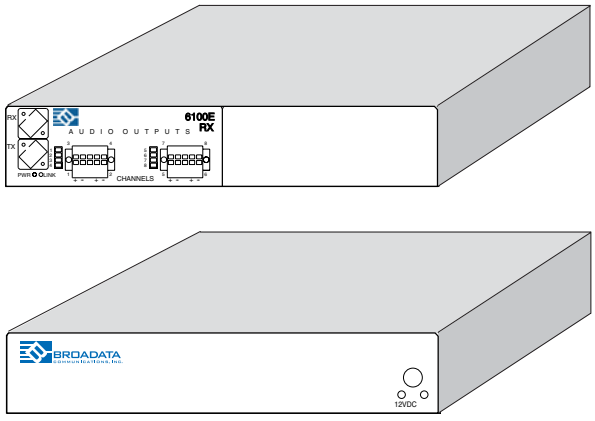

Figure 1-4
6108E-R Front/Rear Panels

2.0 SETUP

The BCI 6100E Series units are used in pairs. One 6100E-T transmitter unit is located at the near end and connected to an identical 6100E-R receiver (6108E or 6116E, respectively) located at the far end of the link through two optical fibers. Each unit provides a separate electrical interface connector for the audio data signals. Connections are one to one between both units. Figure 2-1 depicts a typical installation.

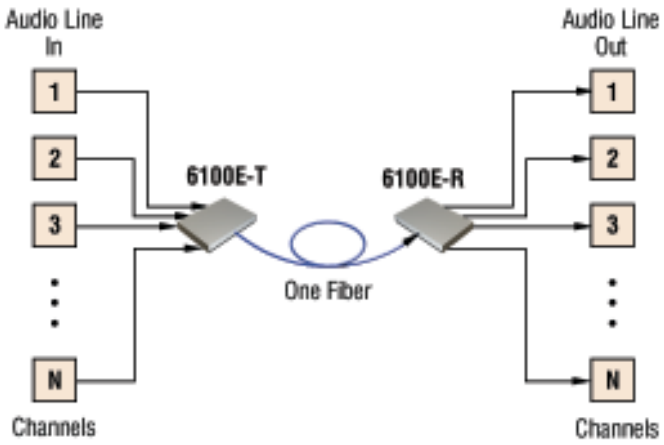

Figure 2-1
6100E Series Setup

2.1 Mounting

Before installing the units into your housing, make sure there is enough space to pull and connect both the electrical and optical cables without stressing them beyond the manufacturer's limitations (also known as the bend radius minimum). Rack Mount kits are available through special order.

2.2 Cabling and Connectors

In order to setup the BCI 6100E properly, make sure to observe the following instructions when installing the proper cables. The 6100E requires two parts to the cabling setup: the audio and the optical.

2.2.1 Audio Cable Connection

The only cable connections on the electrical side are for the terminal block audio interfaces.

To connect the audio component, connect your terminal block connectors to the appropriate channels, as illustrated in Figure 2-2. The pinout assignment for the terminial block connector is shown in Figure 2-3.

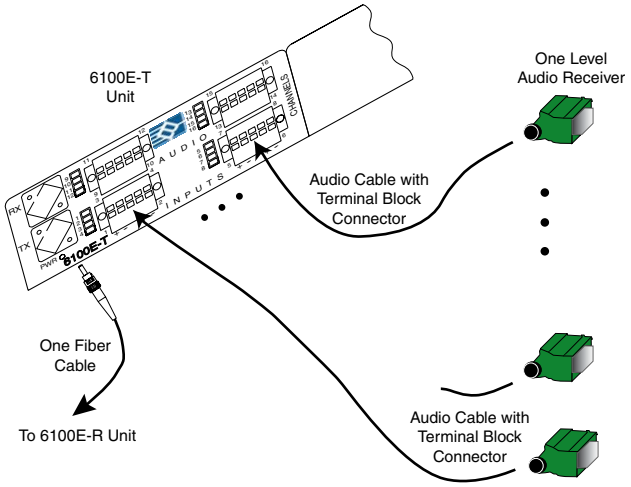

Figure 2-2
Audio Connection

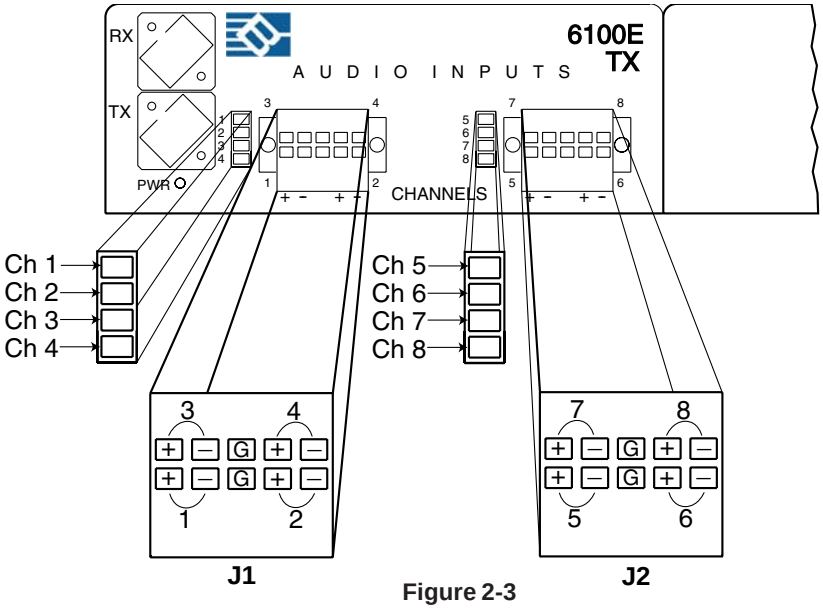

Figure 2-3
Terminal Block Pinout Assignment

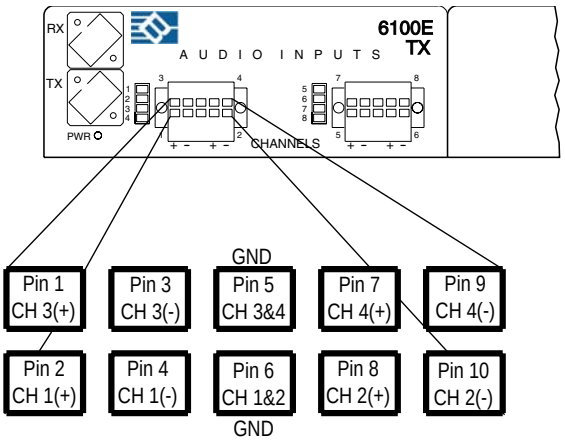

Table 1
6100E-T/6100E-R Terminal Block (J1) Pinout

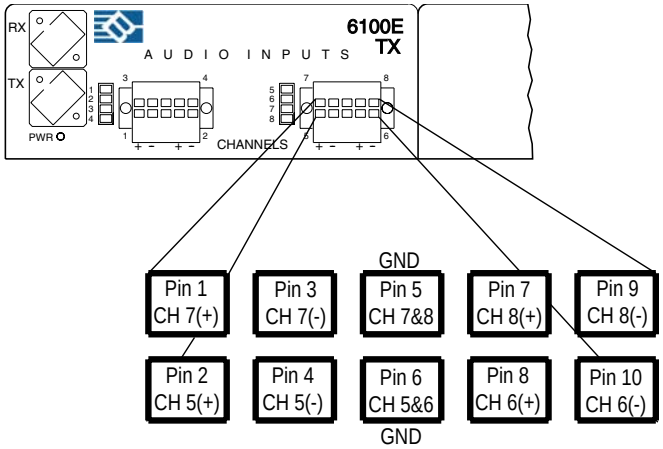

Table 2
6100E-T/6100E-R Terminal Block (J2) Pinout

The following sections provide installation procedures for connecting 6100E audio channel interfaces. Please refer to Figure 2-2.

The audio interface in the 6108E/6116E system supports transmission of eight/sixteen channels of high fidelity audio, respectively. Line-level audio signals are connected to the 6100E units over balanced terminal block cable. Use the following steps for transmission of high-fidelity audio:

1. Connect and label 8 or 16 terminal block cables to the output connectors of the 8 or 16 line-level audio sources to be sent.
2. Connect the terminal block cables of the 8 or 16 signals to be transmitted to the corresponding 6100E-T rear panel terminal block female receptacles labeled channels 1, 2, …, 8/16.
3. Repeat Steps 1 and 2 for the receiver end (6100E-R).

4. Connect the terminal block cables of the 8 or 16 signals to be received to the corresponding 6100E-R rear panel terminal block male receptacles labeled channels 1, 2, …, 8/16. Connect and label these 8 or 16 terminal block cables to the input connectors of the 8 or 16 line-level audio receivers/amplifier.

2.2.2 Optical Fiber Connection

Most cable manufacturers identify individual fibers in the fiber cable. Select an appropriate terminated fiber. Each unit's optical ports in the system are specified for use with Multimode (62.5/125 micron) fiber, or Singlemode (9/125 micron) fiber. Follow the ensuing instructions for installing and connecting the fiber optic links:

1. Ensure the power is off before proceeding with the fiber optic cable installation.
2. Prior to connecting the fiber optic cables, remove and save the dust caps from the optical port of both the 6100E units. Wipe the inside of the sleeve with a lint-free pipe cleaner moistened with regent-grade isopropyl alcohol. Clean the fiber optic connector and use a lint-free cloth dampened with alcohol to thoroughly wipe the side and end of the ferrule. Table 3 shows the connection mechanisms for both ST and FC connectors.
3. Connect the fibers from one unit to the other connecting the near end 6100E unit's optical TX port to the far end 6100E unit's optical RX port as illustrated in Figure 2-4. Observe the type of connector you have and connect the optical connector by following the instructions and guidelines from the legend provided below.

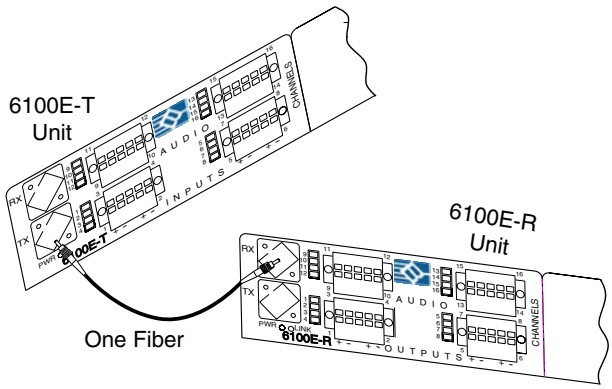

Figure 2-4
Fiber Optic Connection

Connector	Illustration	Description
ST	ST Connector	Hold the connector by the strain-relief boot* and insert the connector ferrule into the port. Rotate the boot until the "key" engages in the slot of the coupling. Push the connector housing forward until it can be turned clockwise to latch to the port.
FC	FC Connector	Hold the connector by the strain-relief boot* and insert the connector ferrule into the port. Rotate the boot until the "key" engages in the slot of the coupling. Push the connector housing forward and screw clockwise until it is tight.
SC	SC Connector	Hold the connector by the connector casing* and insert the connector into the port. Make sure the key, signified by the notch on one side of the connector aligns with the connector on the fiber optic equipment.

Table 3
Fiber Optic Connector Legend

2.3 AC Power Connection

Congratulations! You are now ready to power up the BCI 6100E and set up your network connection. In order to make sure that you have a proper installation, please observe the following:

1. Your AC jack has power.
2. Your electrical system has proper grounding (this ensures that your power supply does not suffer from voltage variations).
3. **Power Surge Protection. This is optional**, but highly recommended. A UPS system provides voltage regularity as well as prevents spikes from occurring, thus protecting your 6100E from sensitive voltage conditions.

The 6100E derives power from an external 12VDC/1.6A power supply (6104E and 6108E) or from an internal 95-240 VAC/1.6A power supply (6116E). This power supply comes standard for the 6100E unless otherwise specified.

To provide power to the 6100E, simply connect the power cord, already provided with the units, and connect it to the wall jack. (You will find one power cord per unit). Once the power cord has been connected to the wall jack, connect the other end to the unit. Once the power cord has been connected, turn the switch ON (I) on the provided back panel.

If you have any problems or concerns, regarding the installation, make sure that you have taken the proper steps to ensure a proper power connection. Otherwise, feel free to contact us for any questions you may have.

3.0 OPERATION

After the installation procedure is completed, the units are ready for operation. To operate the 6100E units, simply apply power as indicated in the previous step. Note that the front panel link status indicator, shown in Table 4, will be activated.

Power	This RED LED indicates that the 6100E-T or 6100E-R unit is connected to a power source and the unit is switched on.
Optical Link	The ON state of this GREEN LED on the 6100E-R unit indicates that the fiber optic cable is properly connected and that optical transmission is operating between the 6100E-T and the 6100E-R units.
Audio Out	This GREEN LED FLASHES ON when the 6100E-R transmits audio signals to the user's audio receiver equipment.
Audio In	This GREEN LED FLASHES ON when the 6100E-T receives audio signals from the user's audio source equipment.

Table 4
Status Indicators

4.0 MAINTENANCE AND TROUBLESHOOTING

4.1 Maintenance

There is no operator maintenance other then keeping the units clean. However, observe the light indicators (shown in Table 4) to make sure that the unit is working properly.

4.2 Troubleshooting

If the BCI 6100E units do not operate properly after installation, check for possible cable breaks, loose connections, and incorrect cable connections. If a problem exists on the fiber link, please check your fiber connectors for improperly cleaned fiber cables and connectors. If problems persist that may be fiber related, contact BCI at 1-800-214-0222 for further assistance.

For electrical problems, perform the following troubleshooting procedures:

1. **If the POWER indicator is OFF, check for the following:**

    a. The line cord is plugged into the unit and your outlet has power.

    b. The 6100E unit is switched on.

    c. Check for blown fuses (located in the rear panel-entry module).

2. **If the POWER indicator is ON, but the Optical Link indicator is OFF, check for the following:**

    a. Make sure the appropriate (singlemode or multimode) fibers are being used.

b. Fiber and fiber connectors are not broken. Ensure that the optical loss does not exceed the specified optical power attenuation (see Section 5.0 Specifications for the optical power budget).

c. For each unit, the transmit (TX) fiber is connected to the other unit's receiver (RX).

3. If the POWER indicator and Optical Link indicator are ON, but the audio/video channels are not operating, then:

a. Check to see that the attached user equipment is turned on.

b. Both ends of the link are connected to the corresponding equipment and to the same corresponding channel port.

c. Cable connections at both the video/audio channels are securely fastened to each connector. Turn the power off, then back on to reset the link.

d. Output levels of the user's video and audio sources are not above the allowed input levels of the 6100E units (see Section 5.0 Specifications).

5.0 SPECIFICATIONS

Audio

Channel Capacity	4, 8, or 16 (Standard)
	32 (Custom)
Operating Mode	Balanced/Unbalanced
Input/Output Impedance	600/600 Ohms (Balanced)
Max. Input/Output Level	+10dBm @ 600 Ohms
	(Balanced)
Magnitude Freq. Response	20Hz to 20kHz @ -3dB
SNR (Weighted)	80dB @ 1kHz, 0dBm Input Level (Balanced)
Connector	Terminal Block

Serial Data

Channel Number	8
Signal Format	RS-232 or RS-422
Data Rate	Up to 115 Kb/s
Connector	Terminal Block

Physical

Dimension: (H x W x D)	
Standalone*	1.72'' x 8.58'' x 12.0''
Standalone**	1.72'' x 17.03'' x 12.0''
Card-cage Plug-in Card	5.24" x 0.94" x 11.6"
Power	+12 VDC @ 1.6 A (4 or 8-ch)
Operating Temperature	0 to +50°C
Humidity	0 to 95% RH, non-condensing
Status Indicators	Power, Optical Link,
	Audio Activity

* For 4- or 8-channel, and for 16-channel unidirectional
** For 16-channel bi-directional

Optical

Fiber Type	Multimode and Singlemode
Number of Fibers	1
Wavelength	1310 and/or 1550 nm
Fiber Optic Connector	ST (Multimode) FC (Singlemode)

6.0 SERVICE PROCEDURE

6.1 Replacement Policy

Standard products found defective on arrival (DOA) will be replaced, based on availability, within 24 to 48 hours anywhere in the U.S. Please call Customer Service at **800-214-0222** for information.

6.2 Return/Repair Service

The 6100E System contains no user serviceable components. If you have a problem with your unit, please contact the Customer Service Department. To facilitate our return/repair processing please contact Broadata Communications, Inc. to obtain a Return Material Authorization (RMA). Please include the following information:

- Product model number
- Serial Number
- Complete description of problem
- Hardware installation description

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Torrance, CA 90505
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(310) 530-1416
(310) 530-5958 (Facsimile)
e-mail: CustomerService@Broadatacom.com
Website: www.broadatacom.com

7.0 LIMITED WARRANTY

Broadata Communications, Inc. (BCI) warrants, for a period of one year from date of shipment, each product sold shall be free from defects in material and workmanship. BCI will correct, either by repair, or at BCI's election, by replacement, any said products that in our sole discretion prove to be defective and are returned to the manufacturing location within 30 days after such defect is ascertained. All warranties are limited to defects arising under normal use and do not include malfunctions or failure resulting from misuse, abuse, neglect, alterations, electrical power problems, usage not in accordance with product instructions, improper installation, or damage determined by BCI to have been caused by the Buyer or repair made by a third party. Limited warranties granted on products are to the initial customer end-user and are not transferable. OUR LIABILITY UNDER THIS WARRANTY SHALL IN ANY CASE BE LIMITED TO THE INVOICE VALUE OF THE PRODUCT SOLD AND BCI SHALL NOT BE LIABLE TO ANYONE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES ARISING FROM THE USE OF ITS PRODUCTS OR THE SALE THEREOF. We make NO WARRANTY AS TO THE MERCHANTABILITY OF ANY GOODS, OR THAT THEY ARE FIT FOR ANY PARTICULAR PURPOSE OR END APPLICATION NOR DO WE MAKE ANY WARRANTY, EXPRESSED OR IMPLIED OTHER THAN AS STATED ABOVE.

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